

Serial No.: 10/006,685

PATENT APPLICATION
Docket No.: NC 82,591

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

1. (previously presented) A composition comprising:
a composition having iron nanoparticles dispersed homogeneously throughout said composition, wherein said composition is formed by heating to a temperature of from about 300°C and above a mixture of:
a ferrocenylethynyl containing component selected from the group consisting of 1,4-bis(ferrocenyl)butadiyne, 1-ferrocenylethynyl-4-(phenylethynyl)benzene and 1,3-bis(ferrocenylethynyl)benzene; and
an aromatic-acetylene containing component selected from the group consisting of 1,2,4,5-tetrakis(phenylethynyl)benzene, 1,2,4-tris(phenylethynyl)benzene and 1,3,5-tris(phenylethynyl)benzene; and
wherein said ferrocenylethynyl containing component and said aromatic-acetylene containing component are in molar mix proportions of between 1 and 99 of said ferrocenylethynyl containing component and between 99 and 1 of said aromatic-acetylene containing component.
2. (previously presented) The composition of claim 1, wherein said mixture is heated to a temperature of from about 400°C.
3. (previously presented) The composition of claim 1, wherein said mixture is heated to a temperature of from about 500°C.
4. (previously presented) The composition of claim 1, wherein said mixture is heated to a temperature of from about 600°C.
5. (previously presented) The composition of claim 1, wherein said mixture is heated to a temperature of from about 700°C.
6. (previously presented) The composition of claim 1, wherein said mixture is heated to a temperature of from about 800°C.

Serial No.: 10/006,685

PATENT APPLICATION

Docket No.: NC 82,591

7. (previously presented) The composition of claim 1, wherein said mixture is heated to a temperature of from about 900°C.
8. (previously presented) The composition of claim 1, wherein said mixture is heated to a temperature of from about 1000°C and above.
9. (previously presented) The composition of claim 1, wherein said mixture is heated to a temperature greater than about 300°C and held at said temperature for at least one hour.
10. (previously presented) The composition of claim 1, wherein said ferrocenylethynyl containing component and said aromatic-acetylene containing component are in molar mix proportions of between 10 and 75 of said ferrocenylethynyl containing component and between 90 and 25 of said aromatic-acetylene containing component
11. (previously presented) A method of forming a composition containing iron nanoparticles homogeneously dispersed throughout, said method comprising the steps of: mixing between 1 and 99 molar proportion of 1,4-bis(ferrocenyl)butadiyne and between 99 and 1 molar proportion of an aromatic-acetylene containing component selected from the group consisting of 1,2,4,5-tetrakis(phenylethynyl)benzene, 1,3,5-tris(phenylethynyl)benzene and 1,2,4-tris(phenylethynyl)benzene; heating said mixture for at least 1 hour at between 300 and 1000°C; and forming a thermoset or a carbon composition having metal nanoparticles dispersed homogeneously throughout.
12. (original) The method of claim 11, wherein said metal nanoparticles have a size of greater than 1 nm.
13. (original) The method of claim 11, wherein there is a decrease in the weight of said mixture of less than 20% when said mixture is heated.

Serial No.: 10/006,685

PATENT APPLICATION

Docket No.: NC 82,591

14. (original) The method of claim 11, further comprising the step of controlling the temperature and time duration at said temperature thereby providing control over the size of the metal nanoparticle.
15. (original) The method of claim 11, further comprising the step of forming thermoset fibers.
16. (previously presented) The method of claim 11,
wherein said mixing is between 10 and 75 molar proportion of said 1,4-bis(ferrocenyl)butadiyne and between 90 and 25 molar proportion of said aromatic-acetylene containing component;
heating said mixture at between 300 and 1000°C; and
forming a thermoset or a carbon composition having metal nanoparticles dispersed homogeneously throughout.

Serial No.: 10/006,685

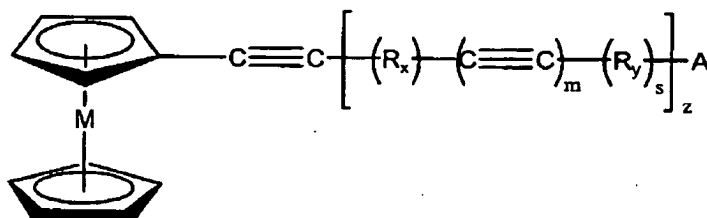
PATENT APPLICATION

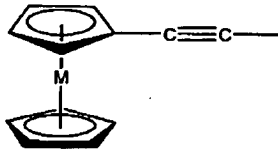
Docket No.: NC 82,591

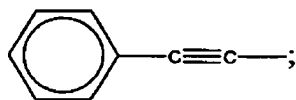
17. (currently amended) A composition having iron nanoparticles dispersed homogeneously throughout, formed by heating to a temperature of from about 300°C and above a mixture of:

an organometallic component and an aromatic-acetylene containing component;

wherein said organometallic component comprises the formula:



wherein A is selected from the group consisting of H, , and



wherein M is a metal selected independently from the group consisting of Fe, Mn, Ru, Co, Ni, Cr and V;

wherein R_x is independently selected from the group consisting of an aromatic, a substituted aromatic group and combinations thereof;

wherein R_y is independently selected from the group consisting of an aromatic, a substituted aromatic group and combinations thereof;

wherein m is ≥ 0 ;

wherein s is ≥ 0 ;

wherein z is ≥ 0 ;

wherein m and s are independently determined in each repeating unit;

wherein said aromatic-acetylene containing component is selected from the group consisting of 1,2,4,5-tetrakis(phenylethynyl)benzene and 1,3,5-tris(phenylethynyl)benzene; and

Serial No.: 10/006,685

PATENT APPLICATION
Docket No.: NC 82,591

wherein said organometallic component and said aromatic-acetylene containing component are in molar mix proportions of between 1 and 99 of said organometallic component and between 99 and 1 of said aromatic-acetylene containing component.

18. (previously presented) The composition of claim 17,
wherein said organometallic component and said aromatic-acetylene containing component are in molar mix proportions of between 10 and 75 of said organometallic component and between 90 and 25 of said aromatic-acetylene component.
19. (previously presented) The composition of claim 16, wherein the heating step comprises heating for at least one hour at between 300 and 1000°C.